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EXAMINER

CHAU, COREY P

ART UNIT PAPER NUMBER

2615

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/500,758	Applicant(s) HAEB-UMBACH ET AL.	
	Examiner Corey P. Chau	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 1 is objected to because of the following informalities: on line 1, recites "Audio enhancement system (1)", should be replaced with "An audio enhancement system". Appropriate correction is required.
2. Claims 2-8 are objected to because of the following informalities: on line 1, recites "Audio enhancement system (1)", should be replaced with "The audio enhancement system". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 3, and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claims 3 and 9, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).
6. Regarding claim 9, the phrase "in particular" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

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***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1-7 and 9-10 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 20040125962 to Christoph.

9. Regarding Claim 1, Christoph discloses audio enhancement system (1), comprising

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audio signal (z, y, r) inputs for a distorted desired signal (z, r) and at least a reference signal (y) (Figs. 1-2, 8-9, 26, and 28; page 5, paragraphs 0068-0070), and

a spectral processor (PP) coupled to the audio signal (z, y, r) inputs for processing the distorted desired signal (z, r) by means of the at least one reference signal (y) acting as an estimate for the distortion of the desired signal (z, r) (Figs. 1-2, 8-9, 26, and 28; page 4, paragraph 0066; page 5, paragraphs 0068-0070; page 9, paragraphs 0107-0108),

characterized in that the spectral processor (PP) is arranged for modifying said processing such that the estimate for the distortion is a function of A times the spectral power of the at least one reference signal (y), where A is a ratio between the time averaged spectral power of the distortion of the desired signal and the time averaged spectral power of the at least one reference signal (y) (Figs. 1-2, 8-9, 26, and 28; page 4, paragraph 0066; page 5, paragraphs 0068-0070; page 9, paragraphs 0107-0109).

10. Regarding Claim 2, Christoph discloses the estimate for the distortion is at least partly proportional to A times the spectral power of the at least one reference signal (y) (Figs. 1-2, 8-9, 26, and 28; page 4, paragraph 0066; page 5, paragraphs 0068-0070; page 9, paragraphs 0107-0109 and 0112).

11. Regarding Claim 3, Christoph discloses the estimate for the distortion at least partly depends on the signal to noise ratio of the distorted desired signal (z, r) (Figs. 1-2, 8-9, 26, and 28; page 4, paragraph 0066; page 5, paragraphs 0068-0070; page 9, paragraphs 0107-0109 and 0112).

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12. Regarding Claim 4, Christoph discloses the respective spectral powers are defined by some positive function of the spectral power concerned, such as the spectral magnitude, the squared spectral magnitude, the power spectral density or the Mel-scale smoothed spectral density (Figs. 1-2, 8-9, 13-15, 17-18, 26, and 28).

13. Regarding Claim 5, Christoph discloses the ratio A is calculated based on data acquired during absence of the desired signal (Figs. 1-2, 8-9, 13-15, 17-18, 26, and 28; page 8, paragraphs 0099 and 0105).

14. Regarding Claim 6, Christoph discloses the speech enhancement system (1) comprises a speech activity detector (DET), which is coupled to the spectral processor (PP) (Figs. 1-2, 8-9, 13-15, 17-18, 26, and 28; page 8, paragraphs 0099 and 0105).

15. Regarding Claim 7, Christoph discloses the audio enhancement system (1) comprises adaptive microphone filter means (3) coupled to the spectral processor (PP) (abstract; Figs. 1-2, 8-9, 26; page 5, paragraph 0070).

16. Claim 9 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

17. Claim 10 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

18. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 7039197 to Venkatesh et al. (hereafter as Venkatesh).

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19. Regarding Claim 1, Venkatesh discloses audio enhancement system (1), comprising

audio signal (z, y, r) inputs for a distorted desired signal (z, r) and at least a reference signal (y) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 11, lines 48-65; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4), and

a spectral processor (PP) coupled to the audio signal (z, y, r) inputs for processing the distorted desired signal (z, r) by means of the at least one reference signal (y) acting as an estimate for the distortion of the desired signal (z, r) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 11, lines 48-65; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4),

characterized in that the spectral processor (PP) is arranged for modifying said processing such that the estimate for the distortion is a function of A times the spectral power of the at least one reference signal (y), where A is a ratio between the time averaged spectral power of the distortion of the desired signal and the time averaged spectral power of the at least one reference signal (y) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48-65; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

20. Regarding Claim 2, Venkatesh discloses the estimate for the distortion is at least partly proportional to A times the spectral power of the at least one reference signal (y) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-

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67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

21. Regarding Claim 3, Venkatesh discloses the estimate for the distortion at least partly depends on the signal to noise ratio of the distorted desired signal ( $z_r$ ) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

22. Regarding Claim 4, Venkatesh discloses the respective spectral powers are defined by some positive function of the spectral power concerned, such as the spectral magnitude, the squared spectral magnitude, the power spectral density or the Mel-scale smoothed spectral density (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

23. Regarding Claim 5, Venkatesh discloses the ratio  $A$  is calculated based on data acquired during absence of the desired signal (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 13, line 56 to column 14, line 13; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

24. Regarding Claim 6, Venkatesh discloses the speech enhancement system (1) comprises a speech activity detector (DET), which is coupled to the spectral processor (PP) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 13,



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line 56 to column 14, line 13; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

25. Regarding Claim 7, Venkatesh discloses the audio enhancement system (1) comprises adaptive microphone filter means (3) coupled to the spectral processor (PP) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 14, lines 28-48; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

26. Regarding Claim 8, Venkatesh discloses the audio enhancement system (1) comprises one or more loudspeakers (6) and echo cancelling filter means (7) coupled between the at least one loudspeaker (6) and the spectral processor (PP) (Figs. 3, 6, 11-12; column 3, lines 31-44; column 9, lines 45-67; column 10, lines 29-51; column 11, lines 48 to column 12, line 36; column 13, line 56 to column 14, line 13; column 14, lines 28-48; column 15, line 46 to column 16, line 9; column 17, lines 31-45; column 17, line 57 to column 18, line 4).

27. Claim 9 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

28. Claim 10 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

29. Claims 1-2 and 5-10 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 20020039425 to Burnett et al. (hereafter as Burnett).

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30. Regarding Claim 1, Burnett discloses audio enhancement system (1), comprising

audio signal (z, y, r) inputs for a distorted desired signal (z, r) and at least a reference signal (y) (Figs. 2-5; page 1; paragraph 0013-0014), and

a spectral processor (PP) coupled to the audio signal (z, y, r) inputs for processing the distorted desired signal (z, r) by means of the at least one reference signal (y) acting as an estimate for the distortion of the desired signal (z, r) (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0029-0037),

characterized in that the spectral processor (PP) is arranged for modifying said processing such that the estimate for the distortion is a function of A times the spectral power of the at least one reference signal (y), where A is a ratio between the time averaged spectral power of the distortion of the desired signal and the time averaged spectral power of the at least one reference signal (y) (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0029-0037).

31. Regarding Claim 2, Burnett discloses the estimate for the distortion is at least partly proportional to A times the spectral power of the at least one reference signal (y) (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0028-0037).

32. Regarding Claim 5, Burnett discloses the ratio A is calculated based on data acquired during absence of the desired signal (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0028-0037).

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33. Regarding Claim 6, Burnett discloses the speech enhancement system (1) comprises a speech activity detector (DET), which is coupled to the spectral processor (PP) (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0028-0037).

34. Regarding Claim 7, Burnett discloses the audio enhancement system (1) comprises adaptive microphone filter means (3) coupled to the spectral processor (PP) (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0028-0037; page 4, paragraph 0054).

35. Regarding Claim 8, Burnett discloses the audio enhancement system (1) comprises one or more loudspeakers (6) and echo cancelling filter means (7) coupled between the at least one loudspeaker (6) and the spectral processor (PP) (Figs. 2-5; page 1; paragraph 0013-0014; pages 2-3, paragraph 0028-0039).

36. Claim 9 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

37. Claim 10 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

### ***Conclusion***


38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P. Chau whose telephone number is (571)272-7514. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

September 28, 2006  
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